

2.  $y = 1 - x^2$ ;  $y = 0$ ; about  $x$ -axis

$$V = \int_{-1}^1 \pi(1-x^2)^2 dx$$

$$V = \pi \int_{-1}^1 (1-x^2)^2 dx = \pi \int_{-1}^1 (1-2x^2+x^4) dx$$

$$= \pi \left( x - \frac{2x^3}{3} + \frac{x^5}{5} \right) \Big|_{-1}^1 = \pi \left( (1) - \frac{2(1)^3}{3} + \frac{(1)^5}{5} \right) - \pi \left( (-1) - \frac{2(-1)^3}{3} + \frac{(-1)^5}{5} \right)$$

$$\pi \left( 1 - \frac{2}{3} + \frac{1}{5} \right) - \pi \left( -1 + \frac{2}{3} - \frac{1}{5} \right)$$

$$\pi \left( \frac{15}{15} - \frac{10}{15} + \frac{3}{15} \right) - \pi \left( -\frac{15}{15} + \frac{10}{15} - \frac{3}{15} \right)$$

$$\pi \frac{8}{15} - \pi \left( -\frac{8}{15} \right)$$

$$V = \frac{16\pi}{15} \text{ in}^3$$

